CLAIMS

[CLAIM 1]

A crushing apparatus, comprising: a rotary crusher; a hydraulic motor for rotating the rotary crusher; a feeder for feeding an object to be crushed to the rotary crusher; and a controller for controlling the feeder and the hydraulic motor, wherein

the hydraulic motor is a capacity-variable motor that can be switched between a predetermined capacity and a large capacity,

the crushing apparatus including:

a load detector for detecting a loading state of the hydraulic motor;

a load judging device for judging whether the loading state of the hydraulic motor detected by the load detector is in an overloaded state or an underloaded state;

a feeding amount controller for increasing or starting a feeding by the feeder the object to be crushed when the load judging device judges as overloaded; and

a motor capacity controller for changing a capacity of the capacity-variable motor to the large capacity when the load judging device judges as overloaded.

[CLAIM 2]

The crushing apparatus according to claim 1, wherein

the motor capacity controller returns the capacity of the hydraulic motor to the predetermined capacity when the load judging device judges that the hydraulic motor is out of the overloaded state.

[CLAIM 3]

The crushing apparatus according to claim 1 or 2, wherein

the rotary crusher is driven by two hydraulic motors; and

one of the hydraulic motors is the capacity-variable motor.

[CLAIM 4]

The crushing apparatus according to claim 3, wherein

the other of the hydraulic motors is a capacity-switchable motor that can be switched between two positions respectively providing the large capacity and the predetermined capacity.

[CLAIM 5]

The crushing apparatus according to any one of claims 1 to 4, wherein

the capacity-variable motor is a control motor that changes the capacity by self-pressure.

[CLAIM 6]

The crushing apparatus according to any one of claims 1 to 5, wherein

the feeding amount controller includes:

a crushing duration time measuring unit for measuring a crushing duration time between time points when the feeding of the object to be crushed is increased or started and when the feeding of the object to be crushed is decreased or stopped;

a time judging unit for judging whether the measured crushing duration time is longer than a predefined set time; and

a feeding amount adjusting unit that decreases a capability of the feeder in a subsequent feeding process when the measured crushing duration time is equal to or shorter than the set time, and increases the capability of the feeder in the subsequent feeding process when the measured crushing duration time is longer than the set time.

[CLAIM 7]

The crushing apparatus according to claim 6, wherein

the feeder is a tub that is rotatably provided on an upper portion of the crusher, the tub rotating to feed the object to be crushed to the crusher; and

the crushing duration time measuring unit measures a forward-rotation time of the tub which rotates in a direction for feeding the object to be crushed to the crusher to provide as the crushing duration time.

[CLAIM 8]

The crushing apparatus according to claim 7, wherein

an upper limit value and a lower limit value of the forward-rotation speed are set for the tub; and

the feeding amount controller has a lower limit value setting unit for setting the lower limit value as a rotation marginal value at which the rotation of the tub is not

stopped.

[CLAIM 9]

The crushing apparatus according to claim 8, wherein

the feeding amount controller has an upper limit value setting unit for setting the preset rotation speed for the tub to the upper limit value of the rotation speed when the measured crushing duration time is judged to be longer than the set time.